WHAT IS CLAIMED IS:

1.   A method for transmitting information via a transmission medium, comprising:

receiving first information represented according to a first number system of a first order;

converting the first information to second information, the second information being represented according to a second number system of a second order, the second order being greater than the first order;

representing the second information using a first number of unique signal characteristics, the first number corresponding to the second order; and

transmitting the second information via the transmission medium.

2.   The method of claim 1 wherein the first number system is a binary number system.

3.   The method of claim 2 wherein the second number system is a ternary number system.

4.   The method of claim 2 wherein the second number system is a quaternary number system.

5.   The method of claim 2 wherein the second number system is a hexadecimal number system.

6.   The method of claim 2 wherein the second number system comprises an nth order number system where n is greater than or equal to three.

7.   The method of claim 1 wherein each of the unique signal characteristics

5   comprises a unique frequency.

8.   The method of claim 1 wherein the transmission medium comprises a wide area network.

10   9.   The method of claim 1 wherein at least a portion of the transmission medium comprises telephone transmission lines.

10.   A method for receiving information transmitted via a transmission medium, comprising:

15   receiving first information via the transmission medium, the first information being represented and transmitted using a first number of signal characteristics;

converting representation of the first information to a first number system of a first order, the first order corresponding to the first number; and

converting the first information to second information, the second information being

20   represented according to a second number system of a second order, the second order being less than the first order.

11.   The method of claim 10 wherein the second number system is a binary number system.

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12.   The method of claim 11 wherein the first number system is a ternary number system.

13.   The method of claim 11 wherein the first number system is a quaternary number system.

14.   The method of claim 11 wherein the first number system is a hexadecimal number system.

15.   The method of claim 11 wherein the first number system comprises an nth order number system where n is greater than or equal to three.

16.   The method of claim 10 wherein each of the unique signal characteristics comprises a unique frequency.

17.   The method of claim 10 wherein the transmission medium comprises a wide area network.

18.   The method of claim 10 wherein at least a portion of the transmission medium comprises telephone transmission lines.

19.   A system for transmitting information via a transmission medium, comprising a transmitting station configured to receive first information represented according to a first number system of a first order, convert the first information to second information, the second information being represented according to a second number system of a second

order, the second order being greater than the first order, represent the second information using a first number of unique signal characteristics, the first number corresponding to the second order, and transmit the second information via the transmission medium.

5   20.   A system for receiving information transmitted via a transmission medium, comprising a receiving station configured to receive first information via the transmission medium, the first information being represented and transmitted using a first number of signal characteristics, convert representation of the first information to a first number system of a first order, the first order corresponding to the first number, and convert the first

10   information to second information, the second information being represented according to a second number system of a second order, the second order being less than the first order.

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